505-A-8

HE20.7011/30:474-80

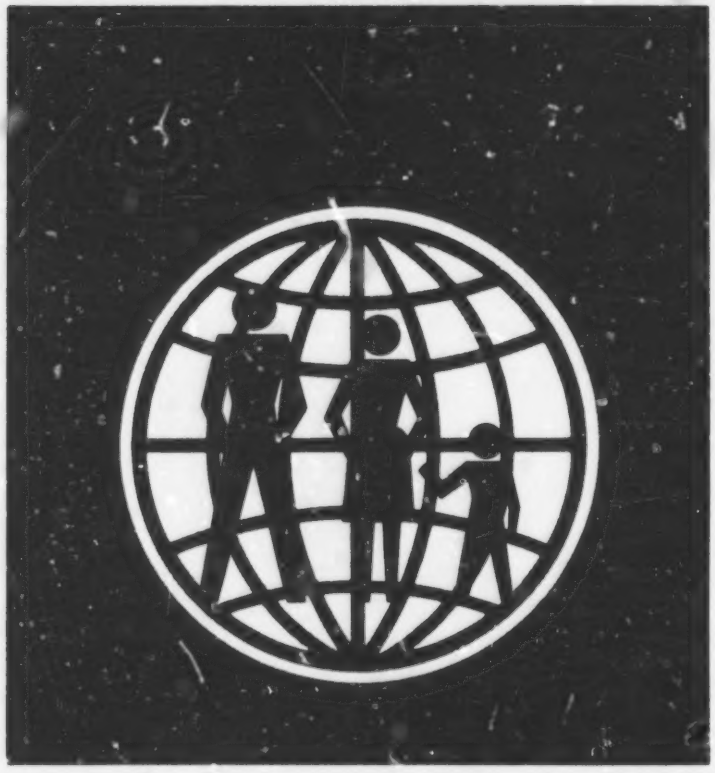
SUMMARY: 1979 - 1980
Issued September 1983

ORIGINAL
COMPLETED
55pgs.

CENTERS FOR DISEASE CONTROL

Surgical Sterilization

SURVEILLANCE



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES • Public Health Service

BEST COPY AVAILABLE

PREFACE

This report analyzes data from the National Hospital Discharge Survey, National Center for Health Statistics*, on tubal sterilization operations and hysterectomies performed on reproductive-age women in U.S. nonfederal, short-stay hospitals during 1979 and 1980. This report combines the surveillance reports on tubal sterilization and hysterectomy under the same cover for the first time. The report is intended for use by clinicians, health planners and evaluators, and other public health professionals interested in the number and characteristics of reproductive-age women who obtain tubal sterilization operations and hysterectomies.

SUGGESTED CITATION:
Centers for Disease Control: Surgical Sterilization Surveillance;
Tubal Sterilization and Hysterectomy in Women Aged 15-44, 1979-1980
Issued September 1983

Library of Congress Catalog Card No. 83-70558

Centers for Disease Control. . . . . William H. Foege, M.D., Director

Center for Health Promotion and Education . . . . . .Dennis Tolsma, M.P.H., Acting Director

Division of Reproductive Health . . . . . Roger W. Rochat, M.D., Director

Epidemiologic Studies Branch. . . . . George L. Rubin, M.B.B.S., F.R.A.C.P., Acting Chief

Sterilization Epidemiology Activity . . . . . .Richard W. Sattin, M.D., Medical Officer
Vijayakumar I. Moses, M.B.B.S., M.D., Medical Officer

Research and Statistics Branch. . . . . .Jack C. Smith, M.S., Chief
Joyce M. Hughes, Statistical Assistant
Martha R. Cowart, Statistical Assistant

Educational Resources, OD . . . . . Priscilla B. Holman, M.S.Ed., Chief

*Division of Health Care Statistics - W. Edward Bacon, Ph.D., Director

U. S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
Centers for Disease Control
Center for Health Promotion and Education
Division of Reproductive Health
Atlanta, Georgia 30333

BEST COPY AVAILABLE

SURGICAL STERILIZATION SURVEILLANCE

1979-1980

Tubal Sterilization in Women Aged 15-44 Years

Vijayakumar I. Moses, M.B.B.S., M.D., Medical Officer
Joyce M. Hughes, Statistical Assistant

	Pages
Table of Contents	1- 2
Text	5-10
Tables	11-17
Figures	18-21

Hysterectomy in Women Aged 15-44 Years

Richard W. Sattin, M.D., Medical Officer
Joyce M. Hughes, Statistical Assistant

	Pages
Table of Contents	23-24
Text	27-32
Tables	33-37
Figures	38-41

I

BEST COPY AVAILABLE

Table 5
Number[1] and Rate[2] of Tubal Sterilizations, by Marital Status[3], United States, 1979-1980

Marital Status	1979 No.	1979 Rate	1980 No.	1980 Rate
Currently married	536	18.4	529	18.0
Previously married	54	14.9	55	13.6
Never married	50	2.8	66	3.7
TOTAL	640	12.7	650	12.4

[1]In thousands
[2]Per 1,000 women 15-44 years of age
[3]For women whose marital status was unknown, the data were redistributed according to the known distribution of marital status.

BEST COPY AVAILABLE

TUBAL STERILIZATION IN WOMEN AGED 15-44 YEARS
1979-1980

TABLE OF CONTENTS

			Page
Section	I.	Summary	5
Section	II.	Introduction	5
Section	III.	Surveillance Methods and Definitions	5
	A.	Statistical Design of the National Hospital Discharge Survey	5
	B.	Data Collection and Processing	6
	C.	Presentation of Estimates	6
	D.	Reliability of Estimates	6
	E.	Definition of Variables	6
Section	IV.	Number and Characteristics of Women Obtaining Tubal Sterilizations	7
	A.	Tubal Sterilization by Geographic Region	7
	B.	Age	7
	C.	Race	7
	D.	Marital Status	8
	E.	Timing of Sterilization in Relation to Pregnancy	8
	F.	Type of Surgical Procedure	8
	G.	Length of Hospital Stay	8
Section	V.	Discussion	8
References			10

TABLES

		Page
Summary Table	Characteristics of Women Aged 15-44 Years Obtaining Tubal Sterilization Operations, United States, 1970-1980	3
Table 1	Number and Rate of Tubal Sterilizations, by Geographic Region, United States, 1979-1980	11
Table 2	Number and Rate of Tubal Sterilizations, by Age Group, United States, 1979-1980	11
Table 3	Number and Percentage Distribution of Tubal Sterilizations, by Race, United States, 1979-1980	12
Table 4	Tubal Sterilization Rates, by Race, United States, 1979-1980	12
Table 5	Number and Rate of Tubal Sterilizations, by Marital Status, United States, 1979-1980	13
Table 6	Number of Tubal Sterilizations, by Timing in Relation to Pregnancy, United States, 1979-1980	14
Table 7	Percentage Distribution of Tubal Sterilizations, by Timing in Relation to Pregnancy, United States, 1979-1980	14
Table 8	Number and Percentage Distribution of Tubal Sterilizations, by Race and Timing in Relation to Pregnancy, United States, 1979-1980	15

BEST COPY AVAILABLE

		Page
Table 9	Number and Percentage Distribution of Tubal Sterilizations, by Type of Surgical Procedure, United States, 1979-1980	16
Table 10	Number and Percentage Distribution of Nonpregnancy-associated Tubal Sterilizations, by Type of Surgical Procedure, United States, 1979-1980	16
Table 11	Mean Number of Hospital Nights Associated with Tubal Sterilization, by Timing in Relation to Pregnancy, United States, 1979-1980	17
Table 12	Percentage Distribution of Nights of Hospitalization for Women Obtaining Nonpregnancy-associated Tubal Sterilizations, by Type of Surgical Procedure, United States, 1979-1980	17

FIGURES

Figure 1	Number of Tubal Sterilizations Performed in Hospitals, United States, 1970-1980	18
Figure 2	Tubal Sterilization Rates, United States, 1970-1980	18
Figure 3	Tubal Sterilization Rates by Region, United States, 1970-1980	19
Figure 4	Tubal Sterilization Rates by Age Group, United States, 1970-1980	19
Figure 5	Tubal Sterilization Rates by Race, United States 1970-1980	20
Figure 6	Nonpregnancy-associated Sterilizations, as a Percentage of all Tubal Sterilizations, United States, 1970-1980	20
Figure 7	Mean Number of Nights Women Were Hospitalized for Tubal Sterilization by Timing in Relation to Pregnancy, United States, 1970-1980	21

BEST COPY AVAILABLE

Summary Table
Characteristics of Women Aged 15-44 Years Obtaining Tubal Sterilization Operations, United States, 1970-1980

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Number[1]	201	269	350	435	484	550	592	702	653	640	650
Rate[2]	4.7	6.2	7.9	9.6	10.4	11.7	12.3	14.3	13.0	12.7	12.4
Geographic Region											
Northeast	47	69	89	115	117	124	138	143	131	137	130
North Central	50	75	89	130	148	168	171	200	179	161	158
South	76	90	128	140	169	193	215	270	265	258	279
West	28	34	44	50	51	66	70	89	78	84	84
Age Group											
15-24	29	45	60	71	80	83	102	121	112	115	124
25-34	124	172	211	261	290	340	337	413	377	385	395
35-44	48	53	79	102	113	127	154	167	164	141	131
Race											
White	135	182	236	308	345	412	436	504	472	456	459
Black	45	64	66	67	68	69	84	104	106	109	120
Unknown	21	23	47	59	71	69	72	93	75	76	72
Marital Status											
Currently Married	179	231	308	376	415	471	497	590	542	526	512
Previously Married	7	14	17	27	31	43	50	57	55	53	53
Never Married	10	18	18	24	29	28	33	45	48	49	64
Unknown	5	6	7	8	9	8	12	10	9	12	21
Timing in Relation to Pregnancy											
Nonpregnancy-associated	58	98	144	219	266	311	345	396	345	316	307
Pregnancy-associated	143	171	205	216	218	239	247	306	308	324	344
Type of Procedure											
Laparoscopic	--	--	--	--	--	184	216	228	187	197	188
Not Laparoscopic	--	--	--	--	--	341	349	474	466	444	462
Unknown	--	--	--	--	--	25	28	0	0	0	0

[1] In thousands
[2] Per 1,000 women 15-44 years of age

BEST COPY AVAILABLE

BLANK PAGE

I. SUMMARY

During the 2-year period 1979-1980, an estimated 1,290,000 women 15-44 years of age had tubal sterilization operations in U.S. hospitals. The tubal sterilization rate decreased from 12.7/1,000 women 15-44 years of age in 1979 to 12.4/1,000 women in 1980. Tubal sterilization rates continued to vary by region and the West still had lower rates than other regions of the country. The mean age at time of sterilization remained constant at about 30. Rates for black women were higher than those for white women, and black women tended to be younger (mean age 28.9) at the time of tubal sterilization than white women (mean age 30.1). The proportion of tubal sterilizations performed on women who were not pregnant at the time of surgery decreased from 49% in 1979 to 47% in 1980. The proportion of tubal sterilizations done by laparoscopy in hospitals decreased from 31% in 1979 to 29% in 1980. In both 1979 and 1980, about 12% of women obtaining nonpregnancy-associated tubal sterilizations in hospitals did not stay overnight.

II. INTRODUCTION

During the past decade tubal sterilization emerged as an important option for women who want to permanently limit their ability to reproduce. In 1975, recognizing the absence of comprehensive nationwide statistics on tubal sterilization, the Division of Reproductive Health,* Center for Health Promotion and Education (CHPE), Centers for Disease Control (CDC), began epidemiologic surveillance of tubal sterilization. This surveillance includes systematic collection, analysis, and dissemination of information on this important health issue.

Our surveillance objectives are to report the numbers and characteristics of women undergoing tubal sterilization. These data and data from other studies may be used to determine morbidity and mortality associated with tubal sterilizations performed in the United States.

The first two tubal sterilization surveillance reports covered 1970-1975 (1) and 1976-1978 (2); this report covers 1979-1980. It 1) documents the number and characteristics of women obtaining tubal sterilization procedures in nonfederal, short-stay hospitals during this 2-year period, and 2) analyzes major changes that occurred during those years. Data from 1970 through 1978, which were presented in the first two tubal sterilization reports, are also included in figures in this report to show trends from 1970 through 1980.

The numbers in this report are estimates based on a systematic sample of medical records from a representative sample of U.S. hospitals. The rates are also estimates and were calculated by dividing the estimated number of tubal sterilizations by yearly estimates of the female population aged 15-44 years in the United States.

III. SURVEILLANCE METHODS AND DEFINITIONS

A. Statistical Design of the National Hospital Discharge Survey

Data for this report were collected by the National Center for Health Statistics (NCHS) as part of the ongoing National Hospital Discharge Survey (NHDS). The NHDS is conducted each year through a sample of more than 400 nonfederal, short-stay hospitals located in 50 states and the District of Columbia. The objective of the NHDS is to estimate the number and characteristics of patients admitted to U.S. short-stay hospitals to undergo surgical procedures or who have a disease or an injury. The NHDS includes only patients discharged from noninstitutional, nonfederal hospitals; such hospitals must have 6 or more inpatient beds and the average hospital stay for all patients must be less than 30 days (3).

* Formerly the Family Planning Evaluation Division

BEST COPY AVAILABLE

B. Data Collection and Processing

Annually, a sample of medical records is abstracted in each designated hospital. Demographic data, final diagnoses, and surgical procedures shown on the medical-record face sheets are collected on a 1-page NHDS medical-abstract form. In 1979 and 1980, about 220,000 medical records, representing about 0.6% of the patients discharged from nonfederal, short-stay hospitals, were included in the NHDS. Thus each abstract in the sample represents approximately 195 patients discharged from hospitals.

Surgical procedures coded 66.2 (bilateral endoscopic destruction or occlusion of fallopian tubes), 66.3 (other bilateral destruction or occlusion of fallopian tubes) and 66.5 (bilateral salpingectomy) according to the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) are the primary focus of this report. A few abstracts coded 66.6 (other salpingectomy) indicated that a tubal sterilization was performed and are also included. These surgical procedures are the ones we believe would be most likely to be obtained by women seeking voluntary contraceptive sterilization, i.e., elective surgery that results in permanent inability to reproduce but which does not involve removing both ovaries or the uterus.

All abstracts related to tubal sterilization were reviewed to determine the surgical approach to the fallopian tubes. Procedures were classified as laparoscopic only if laparoscopic sterilization was specifically mentioned or if there was other information on the abstract to indicate that the sterilization was performed using a laparoscope. All other records were assumed to represent procedures that were not laparoscopic. Thus our estimates of the numbers of sterilization procedures done through laparoscopy are conservative, and our estimates of the numbers done through other methods may be overestimates.

C. Presentation of Estimates

We have rounded estimates of surgical procedures to the nearest thousand. This rounding sometimes keeps the sum of individual cells from equaling the total. Rates, percentages, and averages were calculated from the unrounded estimates and may vary slightly from calculations based on the totals.

The population estimates used to compute rates in this report are based on data from current population surveys conducted by the U.S. Bureau of the Census.

D. Reliability of Estimates

NHDS estimates are subject to measurement errors because hospitals sometimes failed to respond; some abstracts were missing, incomplete, or inaccurate; and errors were made in processing. Because NHDS is a sample, estimates are also subject to sampling error. Small estimates are more likely to be in error than large estimates. In 1979 and 1980, race was "not stated" for about 11% of patients discharged from hospitals. To calculate race-specific rates, we redistributed the data for these patients according to the known distribution of race. Therefore, conclusions regarding race should be interpreted with caution.

E. Definition of Variables

Geographic Region--We analyzed data for the four regions defined by the U.S. Bureau of the Census: Northeast, North Central, South, and West.

Age--Only women of reproductive age (15-44 years) are included.

Race--Data on race are grouped and analyzed as "white" or "black." The latter category includes all races other than white. We do not know what percentage of women in this category in 1979-1980 were black; however, for 1970-1978, 93% were black.

Marital Status--Women are categorized as currently, previously, or never married at the time of tubal sterilization. Consistent with other data from NCHS, women who were separated were considered currently married; divorced and widowed women were counted as previously married.

BEST COPY AVAILABLE

Timing in Relation to Pregnancy--The final diagnoses or surgical procedures for each patient indicated whether she was pregnant at the time of admission to the hospital in which she obtained a tubal sterilization. Women who were not pregnant at this time were classified as undergoing nonpregnancy-associated tubal sterilization (referred to as interval sterilization in previous surveillance reports). For 98% of the women who were pregnant, the diagnostic and surgical codes indicated whether the tubal sterilization was done after a vaginal delivery, concurrently with a cesarean section, or concurrently with an abortion (induced or spontaneous). Therefore, in our analysis we categorized each tubal sterilization as 1) nonpregnancy-associated, 2) postvaginal delivery, 3) postcesarean section, 4) postabortion, or 5) unknown type of pregnancy termination.

Surgical Procedure--Procedures are grouped into two categories: laparoscopic and not laparoscopic. Laparoscopy refers to sterilization performed with a laparoscope via an abdominal approach.

Length of Hospital Stay--This variable is measured as the number of nights a patient was hospitalized. Patients admitted and discharged on the same day, thus spending 0 nights in the hospital, were distinguished from those admitted 1 day and discharged the next (1 night).

IV. NUMBER AND CHARACTERISTICS OF WOMEN OBTAINING TUBAL STERILIZATIONS

A. Tubal Sterilization by Geographic Region

During 1979-1980, an estimated 1,290,000 women aged 15-44 had tubal sterilization operations performed in nonfederal, short-stay hospitals in the United States. The tubal sterilization rates for 1979 and 1980 were 12.7 and 12.4 tubal sterilizations per 1,000 reproductive-age women respectively (Table 1). The number and rate of tubal sterilizations in 1977 were the highest observed for any year from 1970-1980 (Figures 1 and 2). From 1970 to 1977, the tubal sterilization rate increased 204% and then decreased 13% between 1977 and 1980.

All regions of the country showed the same general trend that was observed nationwide. In 1979 and 1980, the highest tubal sterilization rate was seen in the South and the lowest in the West (Table 1). Regional differences in tubal sterilization rates persisted from 1976 through 1980, with the South having the highest rates and the West the lowest rates in the country (Figure 3).

B. Age

In 1979 and 1980, tubal sterilization rates were highest among women 25-34 years old (Table 2). Women aged 35-44 years had intermediate rates and women aged 15-24 years had the lowest rates. During this 2-year period, about 19% of tubal sterilizations were performed on women less than 25 years of age, 60% on women aged 25-34 and 21% on women aged 35-44. During 1979-1980, the average age of women obtaining tubal sterilizations in the United States was about 30. Age-specific tubal sterilization rates for 1970 through 1980 are shown in Figure 4.

C. Race

Most of the tubal sterilizations performed in 1979 and in 1980 were obtained by white women (Table 3). For each year, the tubal sterilization rate for black women was greater than that for white women (Table 4). In 1980, the tubal sterilization rate for black women (16.8/1,000), was 45% greater than that for white women (11.6/1,000). On the average, for 1979 and 1980, white women were 30.1 years old and black women were 28.9 years old at the time of tubal sterilization.

The tubal sterilization rate for black women was greater than that for white women from 1970 through 1980 (Figure 5). For 1971-75, the rate for black women remained relatively constant. It then increased at a slightly faster rate than for white women until 1977. After a fall in the rate of tubal sterilization among blacks in 1978, the rate remained constant in 1979 and 1980. The rate for white women increased each year from 1970 to 1977, then decreased each of the next 3 years.

BEST COPY AVAILABLE

D. Marital Status

In 1979 and 1980, currently married women had the highest tubal sterilization rates among women 15-44 years of age (Table 5). Between 1979 and 1980, the rates for previously married and currently married women decreased by 9% and 2% respectively, while the rate for never-married women increased by 32% (2.8 to 3.7/1,000 women 15-44).

E. Timing of Sterilization in Relation to Pregnancy

During the 2-year period, over half the women undergoing tubal sterilization had the procedure performed while they were in the hospital to have a baby or to have an abortion (Tables 6 and 7). About 50% of white women and 60% of black women obtained sterilizations after a pregnancy termination (Table 8). The proportion of sterilizations that were not associated with pregnancy increased each year from 1970 through 1976, then decreased each year through 1980 (Figure 6).

F. Type of Surgical Procedure

The proportion of all tubal sterilizations that were performed using a laparoscope was 31% in 1979 and 29% in 1980 (Table 9). During 1979-1980 an average of 56% of nonpregnancy-associated tubal sterilizations were performed using the laparoscopic approach (Table 10).

G. Length of Hospital Stay

Between 1970 and 1980, the mean length of stay in the hospital for women having tubal sterilizations decreased from 6.5 to 3.5 nights (Figure 7). In 1979 and 1980, women who obtained nonpregnancy-associated tubal sterilizations averaged 2.4 nights in the hospital compared to 4.5 nights for women who were sterilized while in the hospital to end a pregnancy (Table 11). For women who obtained nonpregnancy-associated sterilizations, 88% who had a laparoscopic procedure were hospitalized less than 3 nights compared with 42% of those women who had a procedure other than laparoscopy (Table 12).

V. DISCUSSION

Our estimates of the numbers of tubal sterilizations performed were obtained from the National Hospital Discharge Survey (NHDS), which is based on a sample of U.S. short-stay hospitals. The sampling of hospitals and medical records within each hospital was designed so that the data are representative of the civilian, noninstitutionalized population of the United States.

In some hospitals, information on race is not recorded on the face sheet of the hospital record. Race was unknown for about 11% of the medical records sampled each year for the NHDS. To calculate race-specific tubal sterilization rates, we distributed the data for these "unknowns" according to the known distribution of race; therefore, conclusions regarding race should be interpreted with caution.

Our 1979 and 1980 estimates of tubal sterilization are larger than NCHS estimates of tubal sterilization because NCHS includes only ICD-9-CM codes 66.2 and 66.3. Nevertheless, the numbers of tubal sterilizations reported here are probably low estimates for the United States because they do not include any tubal sterilizations performed in free-standing day surgery facilities or in federally operated hospitals, such as armed forces and Public Health Service hospitals.

Data on parity would make the results regarding marital status, race, and timing of sterilization more meaningful, but these data are not available from this survey.

Even though the number of sterilizations performed since 1978 appears to have decreased, the sterilization rate for the United States is not necessarily decreasing or leveling off. From 1970-1980 about 5.5 million tubal sterilizations and 4.3 million hysterectomies were performed on reproductive-age women in the United States, resulting in considerably more sterile women in the population. The calculation of tubal sterilization rates in this report includes already sterile women in the denominator. If women who are already sterile because of a previous tubal sterilization or hysterectomy were excluded from the denominator, the tubal sterilization rates would be higher and may be continuing to increase (4).

BEST COPY AVAILABLE

The tubal sterilization estimates derived from the NHDS may be decreasing because operations done in freestanding, day-surgery facilities are not included in the survey. As more tubal sterilization procedures are done in such outpatient facilities, the NHDS data will increasingly underestimate the actual numbers and rates of tubal sterilizations being performed in the United States. A recent study suggested that in 1980, about 16,500 tubal sterilizations were performed nationwide in such facilities (5).

Other significant trends in tubal sterilization were also noted for 1979-1980, especially differences related to race, age, and geographic region. During the first half of the 1970s, the tubal sterilization rates for blacks and whites converged until they were almost equal by 1975, but since 1976, tubal sterilization rates for black women have increased more rapidly than those for white women. Usually the more children a woman has, the less likely she is to want more children; therefore, part of the differences in tubal sterilization rates for blacks and whites may be explained by the higher parity of black women (6). The fact that vasectomy is a more frequently chosen method of contraceptive sterilization among white couples than among black couples may also contribute to the lower rate of tubal sterilization for white women (7); however, this explanation does not adequately account for the divergence in tubal sterilization rates after 1975.

In 1979 and 1980, as in 1970-1978, 25- to 34-year-old women had the highest tubal sterilization rates--a finding that is not surprising since these are the ages by which most women have had all the children they plan to have (6).

Regionally, the West continued to have considerably lower tubal sterilization rates from 1979-1980 than the other regions of the country. From 1976 through 1980, the South had the highest tubal sterilization rates in the country. This difference is due to the fact that the South has a greater proportion of black women than other regions (6) and to the increased age-specific parity of southern women of both races.

Although for all procedures the average length of hospitalization has decreased since 1970 (8-9), the shorter length of hospital stay for tubal sterilization operations may be accounted for, at least in part, by technical advances in the 1970s. Specifically, use of the laparoscope seems to have had a significant impact on the length of hospitalization associated with tubal sterilization. In 1980, 19% of women who underwent nonpregnancy-associated laparoscopic tubal sterilization in a hospital did not stay overnight. In 1970, when only 1% of all sterilizations were done with a laparoscope, it would have been unusual for a woman to obtain a tubal sterilization as an outpatient.

In summary, between 1970 and 1977 the number of tubal sterilizations performed in U.S. hospitals rose dramatically. After 1977, however, the annual tubal sterilization rate began to decline. From 1970 through 1980, black women had higher tubal sterilization rates than white women, although there were fluctuations in the magnitude of these differences. Black women also tended to be younger at the time of tubal sterilization than white women. There were regional differences in tubal sterilization rates, with the West consistently having lower rates than the 3 other regions. The average length of hospital stay for tubal sterilization operations decreased from 1970 through 1980, with a leveling off during 1978-1980. In addition, from 1970 through 1978 an increasing percentage of women whose nonpregnancy-associated sterilizations were done by laparoscopy did not require an overnight stay in the hospital. Both the number and proportion of nonpregnancy-associated laparoscopic tubal sterilizations done in hospitals decreased in 1980 compared with 1979.

BEST COPY AVAILABLE

REFERENCES

1. Center for Disease Control. Surgical sterilization surveillance; tubal sterilization 1970-1975. Atlanta, Georgia: Center for Disease Control, July 1979.

2. Centers for Disease Control. Surgical sterilization surveillance; tubal sterilization 1976-1978. Atlanta, Georgia: Centers for Disease Control, March 1981.

3. National Center for Health Statistics. Development of the design of the NCHS hospital discharge survey. Washington, D.C., U.S. Government Printing Office, 1970. Vital and Health Statistics series 2, no. 39.

4. Nolan TF, Ory HW, Layde PM, Hughes JM, Greenspan JR. Cumulative prevalence rates and corrected incidence rates of surgical sterilization among women in the United States, 1971-1978. Am J Epi 1982; 116:776-81.

5. Greenspan JR. Surgical sterilization in free-standing ambulatory surgical care facilities, 1980. Paper presented at the 10th Annual Meeting, American Association of Gynecologic Laparoscopists, Phoenix, Arizona, November 1981.

6. U.S. Bureau of the Census. Current population reports, series P-20, no. 375 Fertility of American women. June 1980. Washington, D.C. U.S. Government Printing Office, 1979.

7. Westoff CF, McCarthy J. Sterilization in the United States. Fam Plann Perspect 1979; 11:147-52.

8. National Center for Health Statistics. Utilization of short-stay hospitals: summary of nonmedical statistics, 1970. National Center for Health Statistics, 1973. Rockville, MD. Vital and Health Statistics series 13, no. 14.

9. National Center for Health Statistics. Utilization of short-stay hospitals: annual summary for the United States, 1980. National Center for Health Statistics, 1982. Rockville, MD. Vital and Health Statistics series 13, no. 64.

BEST COPY AVAILABLE

Table 1
Number[1] and Rate[2] of Tubal Sterilizations, by Geographic Region,
United States, 1979-1980

Geographic Region	1979		1980	
	No.	Rate	No.	Rate
Northeast	137	12.2	130	11.4
North Central	161	12.1	158	11.8
South	258	16.0	279	16.1
West	84	8.7	84	8.2
TOTAL	640	12.7	650	12.4

[1]In thousands
[2]Per 1,000 women 15-44 years of age

Table 2
Number[1] and Rate[2] of Tubal Sterilizations, by Age Group,
United States, 1979-1980

Age Group	1979		1980	
	No.	Rate	No.	Rate
15-24	115	5.6	124	5.9
25-29	196	21.5	202	20.8
30-34	189	23.0	193	21.9
35-44	141	11.1	131	10.1
TOTAL	640	12.7	650	12.4

[1]In thousands
[2]Per 1,000 women 15-44 years of age

BEST COPY AVAILABLE

Table 3
Number[1] and Percentage Distribution of Tubal Sterilizations,
by Race, United States, 1979-1980

Race	1979		1980	
	No.	%	No.	%
White	456	71.2	459	70.5
Black	109	17.0	120	18.4
Unknown	76	11.9	72	11.1
TOTAL	640	100.0	650	100.0

[1]In thousands

Table 4
Tubal Sterilization Rates[1], by Race,
United States, 1979-1980

Race[2]	1979	1980
White	12.0	11.6
Black	16.7	16.8

[1]Per 1,000 women 15-44 years of age
[2]For women whose race was unknown, the data were redistributed according to the known distribution of race.

BEST COPY AVAILABLE

Table 6
Number[1] of Tubal Sterilizations,
by Timing in Relation to Pregnancy,
United States, 1979-1980

Timing	Number of Women	
	1979	1980
Nonpregnancy-associated	316	307
Pregnancy-associated	324	344
TOTAL	640	650

[1]In thousands

Table 7
Percentage Distribution of Tubal Sterilizations, by Timing
in Relation to Pregnancy, United States, 1979-1980

Timing	Percentage of Women	
	1979	1980
Nonpregnancy-associated	49.4	47.1
Pregnancy-associated		
Postvaginal delivery	29.9	33.3
Postcesarean section	14.9	14.4
Postabortion	3.6	3.4
Unknown type of termination	2.2	1.8
TOTAL	100.0	100.0
Number of women[1]	(640)	(650)

[1]In thousands

BEST COPY AVAILABLE

Table 8

Number[1] and Percentage Distribution of Tubal Sterilizations, by Race[2] and Timing in Relation to Pregnancy, United States, 1979-80

Race and Timing	1979		1980	
	No.	%	No.	%
White				
Nonpregnancy-associated	232	50.9	228	49.7
Pregnancy-associated	224	49.1	231	50.3
TOTAL	456	100.0	459	100.0
Black				
Nonpregnancy-associated	45	41.1	48	40.0
Pregnancy-associated	64	58.9	72	60.0
TOTAL	109	100.0	120	100.0

[1]In thousands
[2]Excludes women of unknown race

BEST COPY AVAILABLE

Table 9
Number[1] and Percentage Distribution of Tubal Sterilizations, by Type of Surgical Procedure, United States, 1979-1980

Surgical Procedure	1979		1980	
	No.	%	No.	%
Laparoscopic	197	30.7	188	28.9
Not laparoscopic	444	69.3	462	71.1
TOTAL	640	100.0	650	100.0

[1]In thousands

Table 10
Number[1] and Percentage Distribution of Nonpregnancy-associated Tubal Sterilizations, by Type of Surgical Procedure, United States, 1979-1980

Surgical Procedure	1979		1980	
	No.	%	No.	%
Laparoscopic	179	56.6	170	55.5
Not laparoscopic	137	43.4	136	44.5
TOTAL	316	100.0	307	100.0

[1]In thousands

BEST COPY AVAILABLE

Table 11
Mean Number of Hospital Nights Associated with Tubal Sterilization by Timing in Relation to Pregnancy, United States, 1979-1980

Timing[1]	1979	1980
Nonpregnancy-associated	2.4	2.5
Pregnancy-associated	(4.6)	(4.4)
Postvaginal delivery	4.0	3.8
Postcesarean section	6.4	6.3
Postabortion	2.2	2.3
TOTAL	3.5	3.5

[1]Excludes terminations of unknown type

Table 12
Percentage Distribution of Nights of Hospitalization for Women Obtaining Nonpregnancy-associated Tubal Sterilization, by Type of Surgical Procedure, United States, 1979-1980

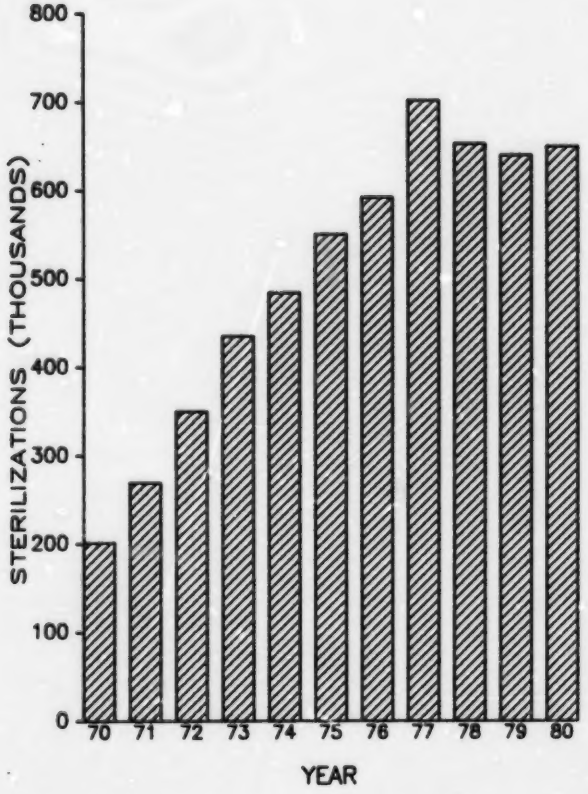
Nights of Hospitalization	Surgical Procedure: Laparoscopic 1979	Laparoscopic 1980	Not Laparoscopic 1979	Not Laparoscopic 1980	Total 1979	Total 1980
0	19.4	18.5	2.8	3.1	12.2	11.6
1-2	70.5	68.5	39.1	39.0	56.9	55.4
3-4	7.4	8.9	35.6	34.3	19.6	20.2
5+	2.7	4.2	22.5	23.5	11.3	12.8
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of women[1]	(179)	(170)	(137)	(136)	(316)	(306)

[1]In thousands

BEST COPY AVAILABLE

BEST COPY AVAILABLE

FIG. 1. NUMBER OF TUBAL STERILIZATIONS PERFORMED IN HOSPITALS,* UNITED STATES, 1970–1980



*Nonfederal, Short–Stay Hospitals

FIG. 2. TUBAL STERILIZATION RATES UNITED STATES, 1970–1980

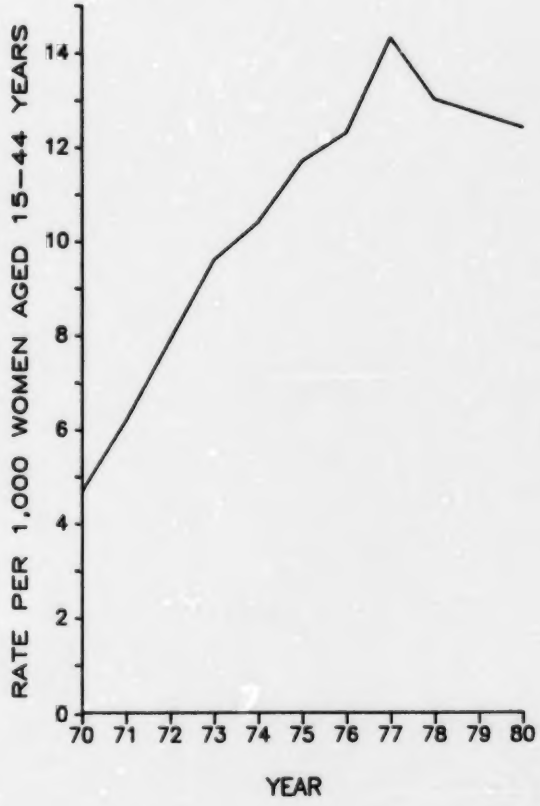


FIG. 3. TUBAL STERILIZATION RATES BY REGION, UNITED STATES 1970–1980

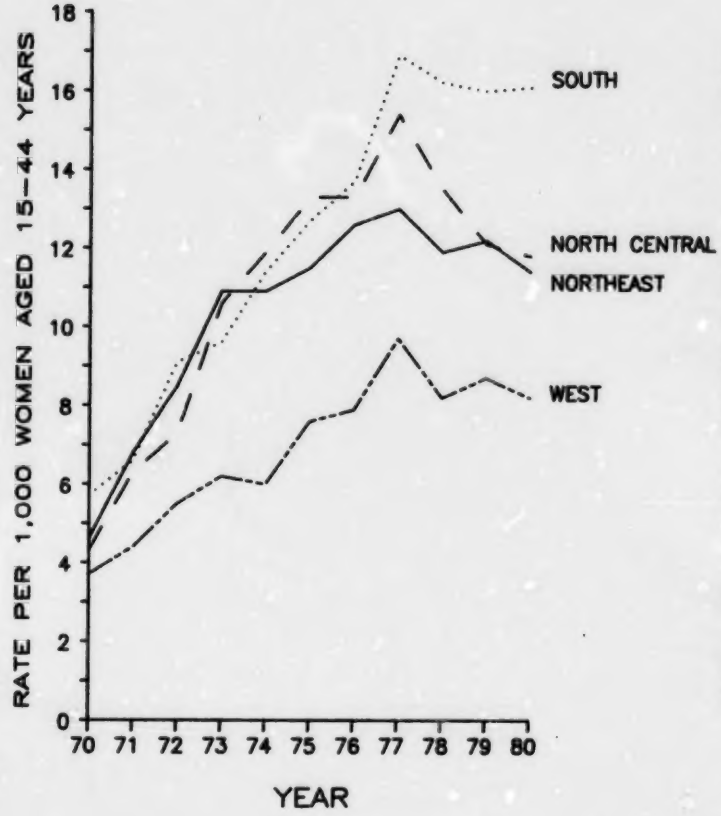
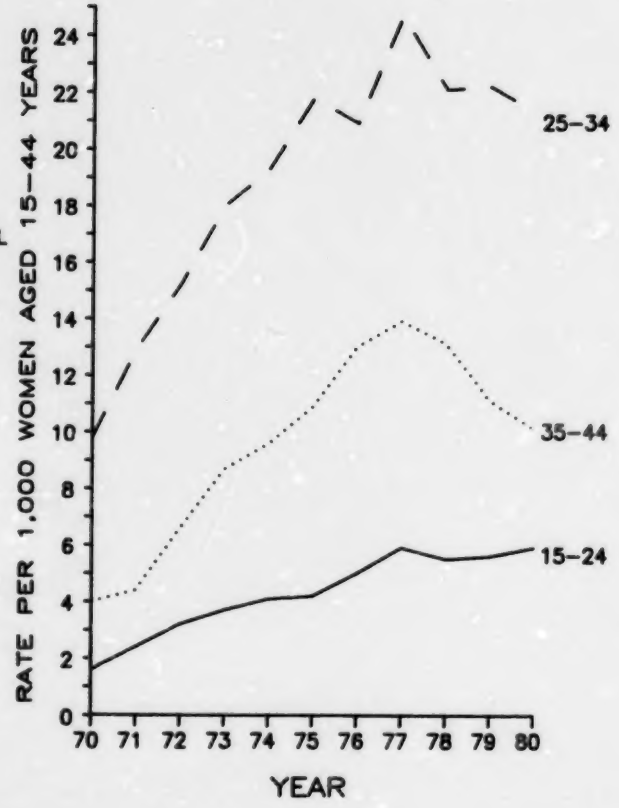


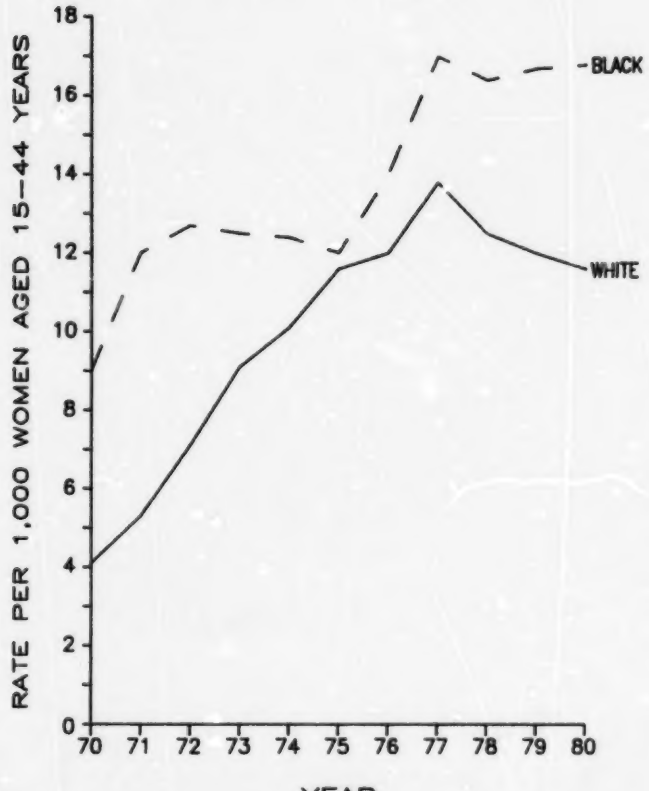
FIG. 4. TUBAL STERILIZATION RATES BY AGE GROUP, UNITED STATES 1970–1980



BEST COPY AVAILABLE

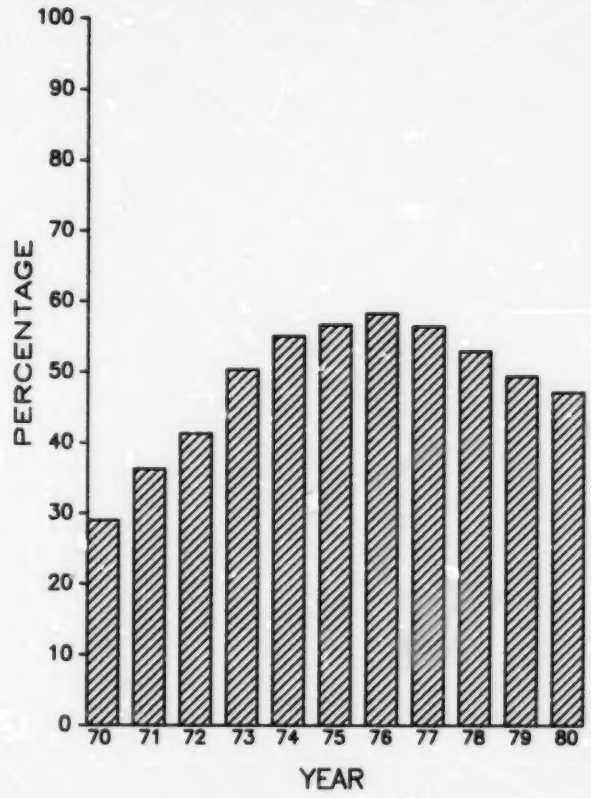
BEST COPY AVAILABLE

FIG. 5. TUBAL STERILIZATION RATES BY RACE,* UNITED STATES 1970–1980



* FOR WOMEN WHOSE RACE WAS UNKNOWN, THE DATA WERE REDISTRIBUTED ACCORDING TO THE KNOWN DISTRIBUTION OF RACE

FIG. 6. NONPREGNANCY–ASSOCIATED STERILIZATIONS AS A PERCENTAGE OF ALL TUBAL STERILIZATIONS UNITED STATES, 1970–1980

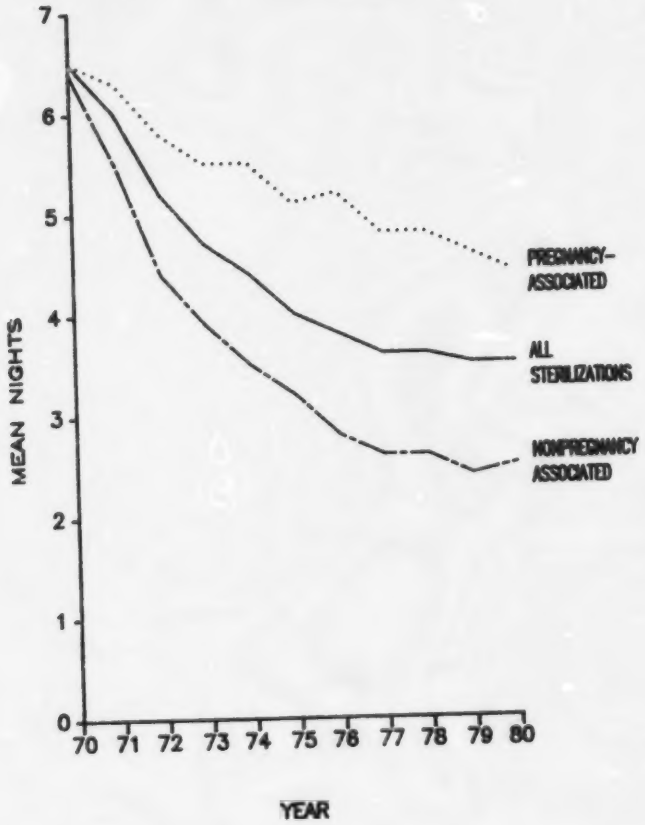


BLANK PAGE

BLANK PAGE

BLANK PAGE

FIG. 7. MEAN NUMBER OF NIGHTS WOMEN WERE HOSPITALIZED FOR TUBAL STERILIZATIONS BY TIMING IN RELATION TO PREGNANCY, UNITED STATES, 1970–1980



BEST COPY AVAILABLE

21

BLANK PAGE

HYSTERECTOMY IN WOMEN AGED 15-44
1979-1980

TABLE OF CONTENTS

		Page
Section I.	Summary	27
Section II.	Introduction	27
Section III.	Surveillance Methods and Definitions	27
A.	Satistical Design of the National Hospital Discharge Survey	27
B.	Data Collection and Processing	28
C.	Presentation of Estimates	28
D.	Reliability of Estimates	28
E.	Definition of Variables	28
Section IV.	Number and Characteristics of Women Obtaining Hysterectomies	29
A.	Hysterectomy by Geographic Region	29
B.	Age	29
C.	Race	29
D.	Marital Status	29
E.	Timing of Hysterectomy in Relation to Pregnancy	29
F.	Type of Surgical Approach	30
G.	Length of Hospital Stay	30
Section V.	Discussion	30
References		32

TABLES

Summary Table	Characteristics of Women Aged 15-44 Years Obtaining Hysterectomies United States, 1970-1980	25
Table 1	Number and Rate of Hysterectomies for Women Aged 15-44, by Geographic Region, United States, 1979-1980	33
Table 2	Number and Rate of Hysterectomies for Women Aged 15-44, by Age Group, United States, 1979-1980	33
Table 3	Number and Percentage Distribution of Hysterectomies for Women Aged 15-44, by Race, United States, 1979-1980	34
Table 4	Hysterectomy Rates for Women Aged 15-44, by Race, United States, 1979-1980	34
Table 5	Number and Rate of Hysterectomies for Women Aged 15-44, by Marital Status, United States, 1979-1980	35
Table 6	Percentage Distribution of Hysterectomies for Women Aged 15-44, by Timing in Relation to Pregnancy, United States, 1979-1980	35
Table 7	Vaginal Hysterectomies for Women Aged 15-44 as a Percentage of All Hysterectomies, by Age Group, United States, 1979-1980	36

BEST COPY AVAILABLE

		Page
Table 8	Vaginal Hysterectomies for Women Aged 15-44, by Region, as a Percentage of All Hysterectomies Performed in That Region, United States, 1979-1980	36
Table 9	Vaginal Hysterectomies for Women Aged 15-44 as a Percentage of All Hysterectomies, by Race, United States, 1979-1980	36
Table 10	Mean Number of Hospital Nights Associated with Hysterectomies for Women Aged 15-44, by Geographic Region and Type of Surgical Approach, United States, 1979-1980	37
Table 11	Percentage Distribution of Hysterectomies for Women Aged 15-44, by Nights of Hospitalization, United States, 1979-1980	37
Table 12	Percentage of Women Aged 15-44 Having Hysterectomies and Spending 7 or Fewer Nights in the Hospital, by Type of Surgical Approach, United States, 1979-1980	37

FIGURES

Figure 1	Number of Hysterectomies Performed in Hospitals on Women Aged 15-44 years, United States, 1970-1980	38
Figure 2	Hysterectomy Rates by Year, United States, 1970-1980	38
Figure 3	Hysterectomy Rates by Geographic Region, United States, 1970-1980	39
Figure 4	Hysterectomy Rates by Age Group, United States, 1970-1980	39
Figure 5	Hysterectomy Rates by Race, United States, 1970-1980	40
Figure 6	Hysterectomy Rates by Marital Status, United States, 1970-1980	40
Figure 7	Vaginal Hysterectomies as a Percentage of All Hysterectomies for Women Aged 15-44 Years, by Region, United States, 1970-1980	41
Figure 8	Mean Number of Nights Women Aged 15-44 Were Hospitalized for Hysterectomy, by Type of Surgical Approach, United States,1970-1980	41

BEST COPY AVAILABLE

Summary Table
Characteristics of Women Aged 15-44 Years Obtaining Hysterectomies, United States, 1970-1980

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
Number[1]	306	332	391	413	415	430	403	442	404	405	401
Rate[2]	(7.2)	(7.6)	(8.8)	(9.1)	(9.0)	(9.1)	(8.4)	(9.0)	(8.1)	(8.0)	(7.6)
Geographic Region											
Northeast	63	69	65	71	60	61	55	57	49	48	54
North Central	83	88	94	105	114	114	108	113	110	102	104
South	109	116	162	163	164	178	174	188	179	181	181
West	52	59	70	75	77	77	67	84	66	74	61
Age Group											
15-24	13	15	20	17	22	20	20	27	21	17	22
25-34	107	120	153	166	152	177	167	188	161	172	164
35-44	185	197	218	230	241	233	216	227	221	215	215
Race											
White	218	249	297	308	312	320	293	327	289	296	300
Black	47	46	49	53	51	58	60	59	62	62	57
Unknown	41	38	45	52	53	52	50	56	53	47	43
Marital Status											
Currently married	267	287	335	349	353	360	324	357	317	321	296
Previously married	20	26	33	42	40	42	52	49	48	50	51
Never married	14	14	18	18	19	23	19	28	33	26	37
Unknown	5	6	5	5	4	5	8	8	5	9	16
Surgical Approach											
Vaginal	81	88	109	118	118	125	115	126	103	102	89
Abdominal	225	244	282	295	297	305	288	316	301	303	312

[1]In thousands
[2]Per 1,000 women 15-44 years of age

BEST COPY AVAILABLE

25

BLANK PAGE

I. SUMMARY

During the 2-year period 1979-1980, an estimated 806,000 women aged 15-44 years had a hysterectomy (excluding radical operations) in the United States. In the previous 2-year period, 1977-1978, 846,000 hysterectomies were performed on women in this age group. The hysterectomy rate in the United States decreased from 8.0 per 1,000 women aged 15-44 years in 1979 to 7.6 in 1980. For both years, women in the South had the highest and women in the Northeast the lowest hysterectomy rates. Of women aged 15-44 years, the 35- to 44-year age group had the highest hysterectomy rates in each of the 2 years, averaging 16.8 per 1,000 women. Although most hysterectomies were obtained by white women, the hysterectomy rate for black women was greater than the rate for white women, 8.7 per 1,000 women aged 15-44 years compared with 7.7. Previously married women had higher hysterectomy rates (13.6 per 1,000 women aged 15-44 years) than either currently married (10.9) or never-married women (1.8). The proportion of women aged 15-44 years having vaginal hysterectomies (as a percentage of all hysterectomies) decreased from 25.2% in 1979 to 22.1% in 1980. Women in the West had a higher average percentage of vaginal hysterectomies (29.1%) than women in other regions (South--23.4%, North Central--23.0%, Northeast--18.8%) for 1979 and 1980. The average length of hospital stay associated with hysterectomy decreased slightly from 7.8 to 7.7 nights between 1979 and 1980. In 1980, 60.4% of women undergoing hysterectomies spent 7 or fewer nights in the hospital, compared with 58.7% in 1979.

II. INTRODUCTION

Recognizing the absence of comprehensive nationwide statistics on surgical sterilization, the Division of Reproductive Health,* Center for Health Promotion and Education, Centers for Disease Control, began epidemiologic surveillance of surgical sterilization in 1975. Surgical sterilization is an operation that results in permanent infertility. The term refers mainly to tubal sterilizations and hysterectomies (obtained by women) and vasectomies (obtained by men). Our surveillance includes systematic collection, analysis, and dissemination of relevant information on this subject. Our objectives are to report the numbers and characteristics of women who have had a hysterectomy. These data and data from other studies may be used to determine morbidity and mortality associated with hysterectomies performed in the United States.

Two reports on hysterectomy, covering 1970-1975 and 1976-1978, have been published (1, 2). This report provides data on hysterectomies (excluding radical operations) for 1979-1980, and 1) documents the number and characteristics of reproductive-age women (15-44 years of age) obtaining hysterectomies in nonfederal, short-stay hospitals in the United States during this 2-year period, and 2) analyzes major changes that occurred during those years. Data for 1970-1975 and 1976-1978 that were presented in the previous surgical sterilization reports on hysterectomy are included in this report for comparison purposes.

The numbers in this report are estimates based on a systematic sample of medical records from a representative sample of hospitals in the United States. The rates are also estimates and were calculated by dividing the estimated number of hysterectomies by yearly estimates of the female population aged 15-44 years in the United States.

III. SURVEILLANCE METHODS AND DEFINITIONS

A. Statistical Design of the National Hospital Discharge Survey

Data for this report were collected by the National Center for Health Statistics (NCHS) as part of the ongoing National Hospital Discharge Survey (NHDS). The NHDS is conducted each year through a sample of more than 400 nonfederal, short-stay hospitals representing the 50 states and the District of Columbia. The objective of the NHDS is to estimate the number and characteristics of patients admitted to U.S. short-stay hospitals to undergo surgical procedures or who have a disease or an injury. The NHDS includes only patients discharged from noninstitutional, nonfederal hospitals; such hospitals must have 6 or more inpatient beds and the average hospital stay for all patients must be less than 30 days (3).

*Formerly Family Planning Evaluation Division

BEST COPY AVAILABLE

B. Data Collection and Processing

Annually, a sample of medical records is abstracted in each designated hospital. Demographic data, final diagnoses, and surgical procedures shown on the medical-record face sheets are collected on a 1-page NHDS medical-abstract form. In 1979 and 1980, about 220,000 medical records, representing about 0.6% of the patients discharged from nonfederal, short-stay hospitals, were included in the NHDS. Thus each abstract in the sample represents approximately 195 patients discharged from hospitals.

Only simple hysterectomy is evaluated in this report--i.e., operations performed during 1979-1980 coded 68.3, 68.4, or 68.5 according to the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) (4). For 1970-1978, the operations included in the report were coded 69.1, 69.2, or 69.4 according to the 8th revision of the International Classification of Diseases (ICDA-8) (5). This report does not include radical hysterectomies (ICD-9-CM codes 68.6 and 68.7 and ICDA-8 codes 69.3 and 69.5) or pelvic exenteration (ICD-9-CM code 68.8 and ICDA-8 code 69.7), both of which are performed at the advanced stages of pelvic cancer. The procedures listed under these ICD-9-CM and ICDA-8 codes are comparable.

C. Presentation of Estimates

We have rounded estimates of surgical procedures to the nearest thousand. This rounding sometimes keeps the sum of individual cells from equalling the total. Rates, percentages, and averages were calculated from the unrounded estimates and may vary slightly from calculations based on the totals.

The population estimates used to compute rates in this report are based on data from current population surveys conducted by the U.S. Bureau of the Census.

D. Reliability of Estimates

NHDS estimates are subject to measurement errors because hospitals sometimes failed to respond; some abstracts were missing, incomplete, or inaccurate; and errors were made in processing. Because a sample was used in the NHDS, estimates are also subject to sampling error. Small estimates are more likely to be in error than large estimates. The approximate relative standard error for the number of hysterectomies performed during 1979-1980 was about 8% for each year.

In 1979 and 1980, race was "not stated" for about 11% of patients discharged from hospitals. To calculate race-specific rates, we redistributed the data for these patients according to the known distribution of race; therefore, conclusions regarding race should be interpreted with caution.

E. Definition of Variables

Geographic Region--We analyzed data for the four regions defined by the U.S. Bureau of the Census: Northeast, North Central, South, and West.

Age--Only women of reproductive age (15-44 years) are included.

Race--Data on race are grouped and analyzed as "white" or "black." The latter category includes all races other than white. We do not know what percentage of women in this category in 1979-1980 were black; however, for 1970-1978, 93% were black.

Marital Status--Women were categorized as currently, previously, or never married at the time of hysterectomy. Consistent with other data from NCHS, women who were separated were considered currently married; divorced and widowed women were classified as previously married.

Surgical Approach--The two categories of surgical approach are abdominal and vaginal.

Timing in Relation to Pregnancy--The final diagnoses or surgical procedures for each patient indicated whether she was pregnant at the time of admission to the hospital in which she obtained a hysterectomy.

BEST COPY AVAILABLE

Length of Hospital Stay--This variable is measured as the number of nights a patient was hospitalized. Three categories were used in our analyses: ≤7 nights, 8-11 nights, and 12+ nights of hospitalization.

IV. NUMBER AND CHARACTERISTICS OF WOMEN OBTAINING HYSTERECTOMIES

A. Hysterectomy by Geographic Region

Between 1970 and 1980 the number of hysterectomies performed annually on women aged 15-44 years in the United States increased from a low of 306,000 in 1970 to a high of 442,000 in 1977, then decreased to 401,000 in 1980 (Summary Table, Figure 1). The hysterectomy rate declined from 8.0 per 1,000 U.S. women aged 15-44 years in 1979 to 7.6 in 1980 (Figure 2).

For the 2-year period 1979-1980, women in the South had the highest hysterectomy rate (10.8 per 1,000) and women in the Northeast had the lowest (4.6 per 1,000) (Table 1, Figure 3). During this period the hysterectomy rate in the South was more than twice that in the Northeast. All regions except the Northeast showed decreases in the hysterectomy rate for 1980 as compared with the rate for 1978: North Central--7%, South--5%, and West--14%; the Northeast showed an increase of 9%.

B. Age

For 1979-1980, as in previous years, hysterectomy rates were highest for women in the 35- to 44-year age group (Table 2, Figure 4). The hysterectomy rates for the 15- to 24- and 35- to 44-year age groups remained relatively constant, while those for the 25- to 34-year age group decreased slightly during these 2 years. Since 1975, hysterectomy rates have declined 23% for the 25- to 34-year age group and 17% for the 35- to 44-year age group. In 1979 and in 1980, nearly 2% of all 35- to 44-year-old women and 1% of all 25- to 34-year-old women in the United States had hysterectomies.

Over the 2-year period, the average age at the time of hysterectomy for reproductive-age women was 35.0 years. The average age for women undergoing hysterectomies varied by region: Northeast--36.5, North Central--35.4, South--34.2, and West--35.0.

C. Race

In 1979 and 1980, more than 70% of hysterectomies performed on 15- to 44-year-old women were obtained by white women (Table 3). From 1979 to 1980, race-specific hysterectomy rates remained relatively constant for whites but decreased for blacks from 9.5 to 7.9 per 1,000 women aged 15-44 years (Figure 5). In 1979, as in previous years, black women had higher hysterectomy rates than white women, but this difference narrowed markedly in 1980 (Table 4, Figure 5). Over the 2-year period, the average age at the time of hysterectomy was 34.8 for black women and 35.0 for white women.

D. Marital Status

In 1979 and in 1980, previously married women had the highest hysterectomy rates among women aged 15-44 years, averaging 13.6 per 1,000 (Table 5, Figure 6). The hysterectomy rates for previously married women were an average of 25% higher than the rates for currently married women. Between 1979 and 1980, hysterectomy rates for previously married and currently married women decreased by 5% and 7% respectively, while the rate for never-married women increased by 47%, from 1.5 to 2.2 per 1,000 women aged 15-44 years. Never-married women who had hysterectomies tended to be younger than currently married and previously married women who had hysterectomies. The average ages for women undergoing hysterectomies during 1979-1980 were 1) currently married--35.3, 2) previously married--34.5, and 3) never married--32.5.

E. Timing of Hysterectomy in Relation to Pregnancy

For 1979-1980, about 3% of hysterectomies were performed on women who were pregnant when they were admitted to the hospital (Table 6). Younger women had a higher percentage of hysterectomies associated with pregnancy than older women. Seven percent of the hysterectomies performed on women 15-24 years of age were associated with pregnancy, compared with 4% and 1% for women 25-34 and 35-44 years of age respectively.

BEST COPY AVAILABLE

F. Type of Surgical Approach

The proportion of hysterectomies performed by the vaginal approach on women aged 15-44 years decreased from approximately 25% in 1979 to 22% in 1980 (Table 7). For the years 1979-1980, women 25-34 years of age had the highest proportion of vaginal hysterectomies performed. For this 2-year period, 28% of the hysterectomies performed for women 25-34 years of age were vaginal, compared with 21% and 16% for women 35-44 and 15-24 years of age respectively.

Proportionally fewer vaginal hysterectomies were performed in all regions in 1980 than in 1979 (Table 8, Figure 7). As in 1972-1978, the West had the highest percentage of vaginal hysterectomies during 1979-1980, and the Northeast had the lowest. In 1979-1980, about 29% of all hysterectomies performed in the West were vaginal hysterectomies, compared with 19% in the Northeast. Over this period an average of 25% of white women undergoing hysterectomies had vaginal procedures; the corresponding figure for black women was 16% (Table 9).

G. Length of Hospital Stay

Between 1970 and 1980, the mean length of stay for women aged 15-44 years undergoing hysterectomy steadily decreased from 9.8 to 7.7 nights, and women undergoing a vaginal hysterectomy spent on the average fewer nights hospitalized than women undergoing an abdominal hysterectomy (Figure 8). In 1979 and 1980, women having vaginal hysterectomies spent on the average 1 less night in the hospital than women having abdominal hysterectomies (Table 10). The mean length of stay also varied among regions for both abdominal and vaginal hysterectomies. Regardless of the type of surgical procedure, women in the West consistently spent fewer nights in the hospital for hysterectomies than women in the other regions.

In 1970, about 70% of women undergoing hysterectomy spent more than 7 nights in a hospital. During 1979-1980, only about 40% of women undergoing hysterectomy spent more than 7 nights in a hospital (Table 11). Women undergoing vaginal hysterectomies were more likely to be discharged within 7 nights than women having abdominal procedures (Table 12). By 1980, about 75% of the women having vaginal hysterectomies were discharged within 7 nights, as compared with 56% of women having abdominal procedures.

V. DISCUSSION

Our estimates of the numbers of hysterectomies were obtained from the National Hospital Discharge Survey (NHDS), which is based on a sample of U.S. short-stay hospitals. The sampling of medical records within each hospital was designed so that the data are representative of the civilian, noninstitutionalized population of the United States.

In general, measurement errors and missing data in NHDS have been kept to a minimum. One exception to this is the variable race, which is classified as unknown on about 11% of the medical records sampled each year. Conclusions regarding race, therefore, should be interpreted with caution.

The numbers and rates of hysterectomies reported here are low estimates for the United States because 1) as mentioned above, no hysterectomies performed in federally operated hospitals, such as armed forces and Public Health Service hospitals, are included, and 2) in calculating hysterectomy rates, we did not adjust the denominator (population at risk) to exclude women who had the operation in a previous year.

Since 1977, the hysterectomy rate for the United States, as well as the annual number of hysterectomies performed, has declined; in 1980, the hysterectomy rate was the lowest since 1971. Regional differences in hysterectomy trends from 1979-1980 were similar to those for 1970-1978. Women in the Northeast consistently had the lowest hysterectomy rates in the country and, on the average, were older than women in other regions at the time of hysterectomy. Also, women in the Northeast continued to have the lowest proportion of vaginal (as opposed to abdominal) hysterectomies as compared with women in other regions. Women in the North Central region had the most stable hysterectomy rate over the 2-year period, and this rate most nearly approximated the average hysterectomy rate for the United States as a whole. More hysterectomies were performed on reproductive-age women in the South than in any other region. Also, women in the South had the highest hysterectomy rates and, on the

BEST COPY AVAILABLE

average, were younger at the time of hysterectomy than women in other regions. The hysterectomy rate for Southern women was nearly two and one-half times that for women in the Northeast. Hysterectomy rates in the West decreased considerably between 1979 and 1980. Additionally, in each of these 2 years women in the West had a higher proportion of vaginal hysterectomies than women in any other regions, continuing a trend started in 1972.

During 1979-1980, as was the case during 1970-1978, the 35- to 44-year age group had the highest hysterectomy rate for reproductive-age women. The hysterectomy rate for the United States has been decreasing steadily since 1977, and the hysterectomy rate for each age group has also decreased. In 1980, about 1 out of every 60 women in the age group 35-44 years underwent a hysterectomy. This is a conservative estimate of the hysterectomy risk for women in this age group. If we adjust the denominator to eliminate those women who had had hysterectomies in previous years, we would expect the rate to be considerably greater than 1 in 60.

To calculate race-specific rates, we assumed that there was little reporting bias and therefore chose to redistribute the unknowns (11%) proportionally according to the distribution of abstracts for which the race of the patient was known.

As in 1970-1978, most hysterectomies performed on reproductive-age women were obtained by white women. For all years 1970-1980, black women had higher hysterectomy rates than white women, but this difference narrowed in 1980. The mean age at the time of hysterectomy continued to be greater for white women than black women.

As in previous years, previously married (divorced and widowed) women had higher hysterectomy rates than currently married women for 1979 and 1980. Never-married women had the lowest hysterectomy rates over the 2-year period; however, this category was the only one in which the rate increased between 1979 and 1980.

For the United States as a whole, the proportion of vaginal hysterectomies (as opposed to abdominal) reached its highest level in 1975 and declined over the next 5 years. Each region showed a decrease in the proportion of vaginal hysterectomies performed in 1980 as compared with the proportion performed in 1975. Although a higher proportion of the hysterectomies performed on white women as compared with hysterectomies performed on black women were vaginal hysterectomies, the proportion of vaginal hysterectomies decreased in both racial groups in 1980 compared with the proportions for 1975.

Between 1970 and 1980, the mean length of hospitalization associated with hysterectomies performed on reproductive-age women decreased by 21% (from 9.8 nights to 7.7 nights), more than twice the decrease (9%--from 5.3 nights to 4.8 nights) in the mean length of stay for all other medical and surgical admissions for women 15-44 years of age (6,7). During this period, the mean length of stay for women undergoing vaginal hysterectomies decreased by 32%, compared with 18% for women undergoing abdominal hysterectomies. Over the 2 years 1979-1980, women having vaginal hysterectomies spent, on the average, 1 less night in the hospital than women having abdominal hysterectomies. For all years 1970-1980, women in the West consistently spent fewer nights in the hospital for hysterectomy than women in other regions, regardless of the type of surgical approach. This finding is consistent with shorter hospitalizations for reproductive-age women in the West for all diagnoses as compared with the average length of hospitalization for women in other regions during the same period (6,7).

BEST COPY AVAILABLE

REFERENCES

1. Center for Disease Control. Surgical sterilization surveillance; hysterectomy in women aged 15-44, 1970-1975. Atlanta, Georgia: Center for Disease Control, Sept. 1980.

2. Centers for Disease Control. Surgical sterilization surveillance; hysterectomy in women aged 15-44, 1976-1978. Atlanta, Georgia: Centers for Disease Control, March 1981.

3. National Center for Health Statistics. Development of the design of the NCHS hospital discharge survey. Washington, D.C., U.S. Government Printing Office, 1970. Vital and Health Statistics series 2, no. 39.

4. Commission on Professional and Hospital Activities. Vol. 3, international classification of diseases, 9th revision, clinical modification. Washington, D.C., Public Health Service Publication no. 80-1260, 1980.

5. National Center for Health Statistics. Vol 1, 8th revision, international classification of diseases, adapted for use in the United States. Washington, D.C., Public Health Service publication no. 1693, 1968.

6. National Center for Health Statistics. Utilization of short-stay hospitals: summary of nonmedical statistics, 1972. National Center for Health Statistics, 1973. Rockville, MD. Vital and Health Statistics series 13, no. 14.

7. National Center for Health Statistics. Utilization of short-stay hospitals: annual summary for the United States, 1982. National Center for Health Statistics, 1982. Rockville, MD. Vital and Health Statistics series 13, no. 64.

BEST COPY AVAILABLE

Table 1
Number[1] and Rate[2] of Hysterectomies for Women Aged 15-44,
by Geographic Region, United States, 1979-1980

Geographic Region	1979		1980	
	No.	Rate	No.	Rate
Northeast	48	4.3	54	4.8
North Central	102	7.7	104	7.7
South	181	11.2	181	10.5
West	74	7.6	61	5.9
TOTAL	405	8.0	401	7.6

[1]In thousands
[2]Per 1,000 women 15-44 years of age

Table 2
Number[1] and Rate[2] of Hysterectomies for Women Aged 15-44,
by Age Group, United States, 1979-1980

Age Group	1979		1980	
	No.	Rate	No.	Rate
15-24	17	0.8	22	1.0
25-34	172	9.9	164	8.8
35-44	215	17.0	215	16.5
TOTAL	405	8.0	401	7.6

[1]In thousands
[2]Per 1,000 women 15-44 years of age

BEST COPY AVAILABLE

Table 3
Number[1] and Percentage Distribution of Hysterectomies for Women Aged 15-44, by Race, United States, 1979-1980

Race	1979		1980	
	No.	%	No.	%
White	296	73.2	300	75.0
Black	62	15.3	57	14.2
Unknown	47	11.6	43	10.8
TOTAL	405	100.0	401	100.0

[1]In thousands

Table 4
Hysterectomy Rates[1] for Women Aged 15-44, by Race, United States, 1979-1980

Race[2]	1979	1980
White	7.8	7.6
Black	9.5	7.9

[1]Per 1,000 women 15-44 years of age
[2]For women whose race was unknown, the data were redistributed according to the known distribution of race.

BEST COPY AVAILABLE

Table 5
Number[1] and Rate[2] of Hysterectomies for Women Aged 15-44, by Marital Status, United States, 1979-1980

Marital[3] Status	1979 No.	1979 Rate	1980 No.	1980 Rate
Currently married	328	11.3	308	10.5
Previously married	51	14.0	54	13.3
Never married	26	1.5	39	2.2
TOTAL	405	8.0	401	7.6

[1]In thousands
[2]Per 1,000 women 15-44 years of age
[3]For women whose marital status was unknown, the data were redistributed according to the known distribution of marital status.

Table 6
Percentage Distribution of Hysterectomies for Women Aged 15-44, by Timing In Relation to Pregnancy, United States, 1979-1980

	1979	1980
Not pregnant when hospitalized	96.9	97.9
Pregnant when hospitalized	3.1	2.1
TOTAL	100.0	100.0
Number of women	(405)	(401)

BEST COPY AVAILABLE

Table 7
Vaginal Hysterectomies for Women Aged 15-44 as a Percentage of All Hysterectomies, by Age Group, United States, 1979-1980

Age Group	1979	1980
15-24	15.2	16.3
25-34	29.4	25.7
35-44	22.7	20.0
TOTAL	25.2	22.1

Table 8
Vaginal Hysterectomies for Women Aged 15-44 by Region as a Percentage of All Hysterectomies Performed in That Region, United States, 1979-1980

Geographic Region	1979	1980
Northeast	20.7	17.0
North Central	25.6	20.4
South	23.8	23.0
West	31.0	27.2
TOTAL	25.2	22.1

Table 9
Vaginal Hysterectomies for Women Aged 15-44 as a Percentage of All Hysterectomies, by Race, United States, 1979-1980

Race[1]	1979	1980
White	26.3	23.9
Black	17.2	13.8

[1]Excludes "unknown" race

BEST COPY AVAILABLE

Table 10
Mean Number of Hospital Nights Associated with Hysterectomies for Women Aged 15-44, by Geographic Region and Type of Surgical Approach, United States, 1979-1980

Surgical Approach and Geographic Region	1979	1980
Abdominal		
Northeast	9.0	8.8
North Central	8.5	8.4
South	8.0	7.8
West	7.0	6.8
Total abdominal	8.1	8.0
Vaginal		
Northeast	8.4	7.6
North Central	7.6	7.2
South	6.7	6.6
West	5.8	5.6
Total vaginal	7.0	6.7
TOTAL	7.8	7.7

Table 11
Percentage Distribution of Hysterectomies for Women Aged 15-44, by Nights of Hospitalization, United States, 1979-1980

Nights of Hospitalization	1979	1980
≤7	58.7	60.4
8-11	33.5	32.5
12+	7.8	7.1
TOTAL	100.0	100.0
Number of women	(405)	(401)

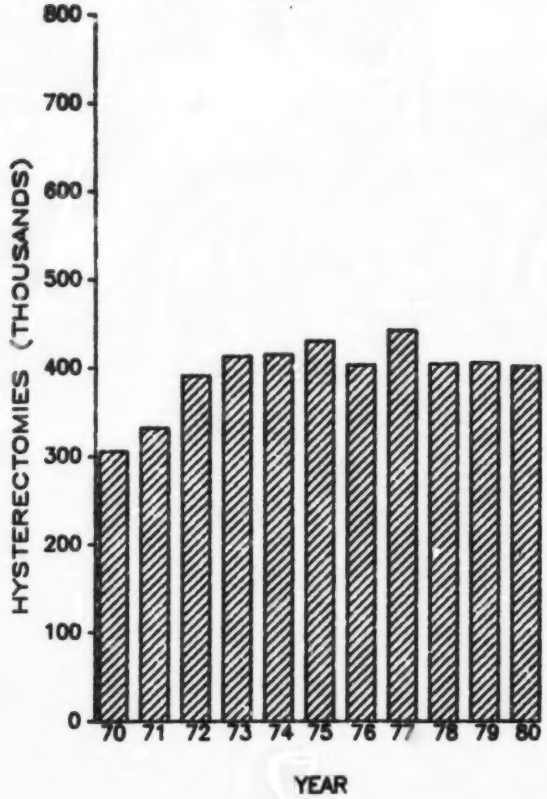
Table 12
Percentage of Women Aged 15-44 Having Hysterectomies and Spending 7 or Fewer Nights in the Hospital, by Type of Surgical Approach, United States, 1979-1980

Surgical Approach	1979	1980
Abdominal	53.7	56.2
Vaginal	73.3	75.2

BEST COPY AVAILABLE

BEST COPY AVAILABLE

FIG. 1. NUMBER OF HYSTERECTOMIES PERFORMED IN HOSPITALS,* ON WOMEN AGED 15–44 YEARS, UNITED STATES, 1970–1980



* NONFEDERAL, SHORT–STAY HOSPITALS

FIG. 2. HYSTERECTOMY RATES UNITED STATES, 1970–1980

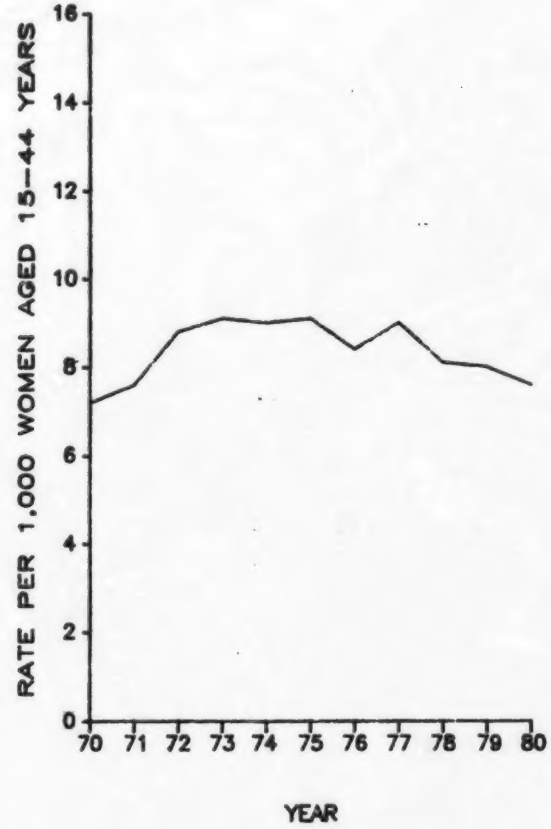


FIG. 3. HYSTERECTOMY RATES BY GEOGRAPHIC REGION, UNITED STATES, 1970–1980

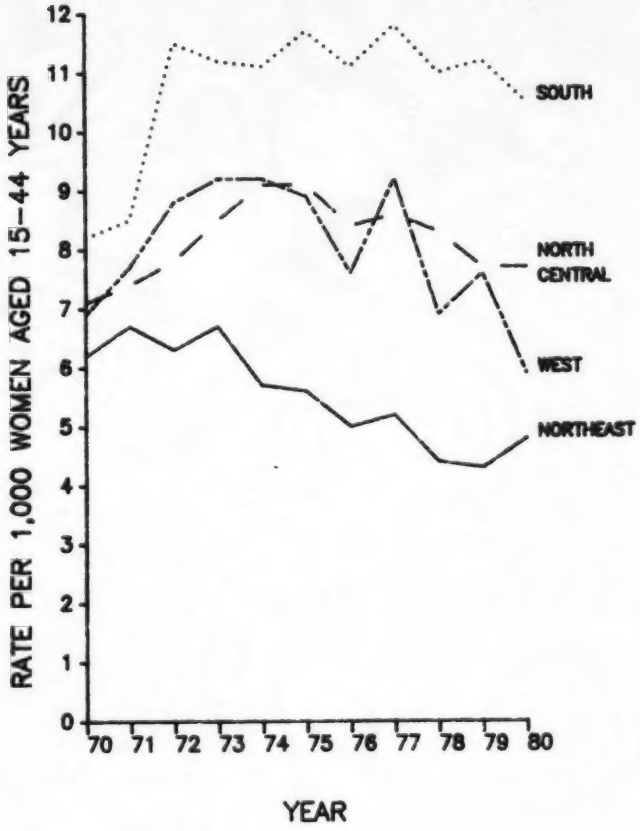
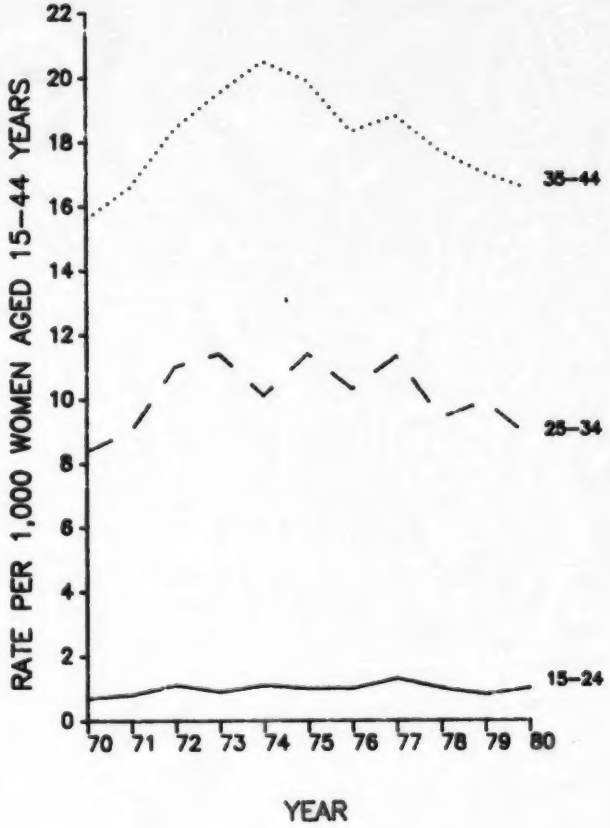


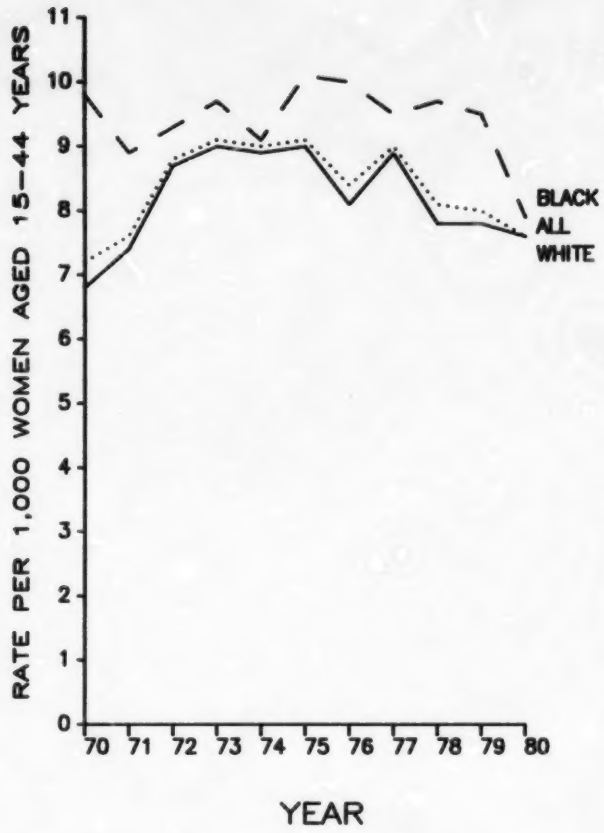
FIG. 4. HYSTERECTOMY RATES BY AGE GROUP, UNITED STATES, 1970–1980



BEST COPY AVAILABLE

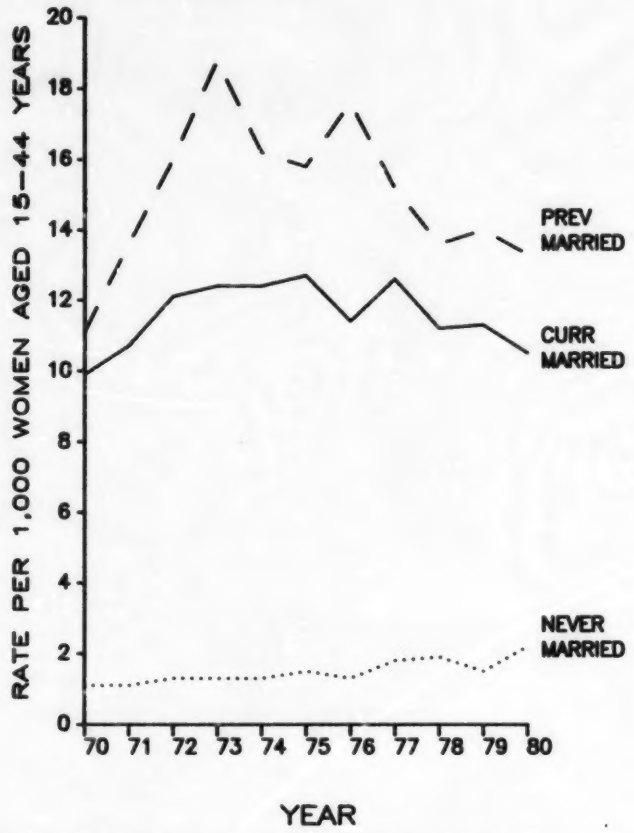
BEST COPY AVAILABLE

FIG. 5. HYSTERECTOMY RATES BY RACE,* UNITED STATES, 1970–1980



* FOR WOMEN WHOSE RACE WAS UNKNOWN, THE DATA WERE REDISTRIBUTED ACCORDING TO THE KNOWN DISTRIBUTION OF RACE

FIG. 6. HYSTERECTOMY RATES BY MARITAL STATUS,* UNITED STATES, 1970–1980



* FOR WOMEN WHOSE MARITAL STATUS WAS UNKNOWN, THE DATA WERE REDISTRIBUTED ACCORDING TO THE KNOWN DISTRIBUTION OF MARITAL STATUS

FIG. 7. VAGINAL HYSTERECTOMIES AS A PERCENTAGE OF ALL HYSTERECTOMIES FOR WOMEN AGED 15–44 YEARS, BY REGION, UNITED STATES, 1970–1980

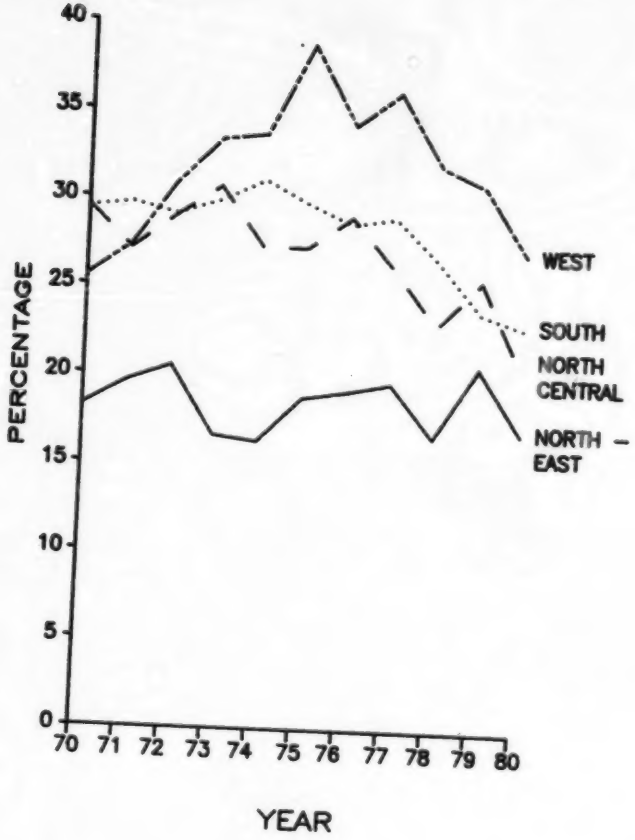
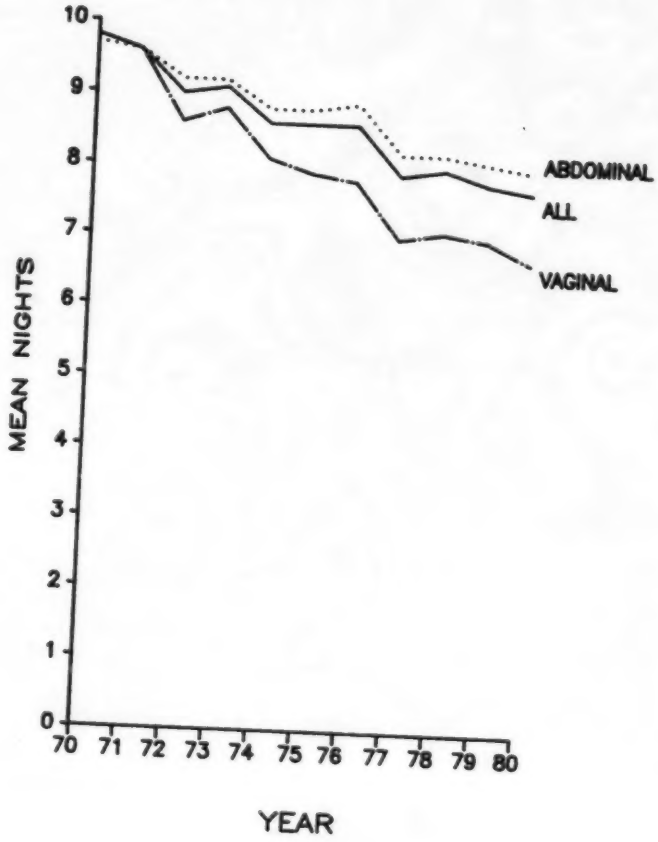


FIG. 8. MEAN NUMBER OF NIGHTS WOMEN AGED 15–44 YEARS WERE HOSPITALIZED FOR HYSTERECTOMY, BY TYPE OF SURGICAL APPROACH, UNITED STATES, 1970–1980



BEST COPY AVAILABLE